REMARKS

In response to the Office Action mailed April 1, 2002:

[1-4] The election of invention 1, claims 1-7, is confirmed.

[5] The disclosure, that was objected to, is amended as required.

[6-7] Claims 1, 5, and 7 were rejected under §102 over Williams '071. This rejection is respectfully traversed.

Williams discloses a hard coating on a surface of stainless steel, and states (col. 2, line 36): "Whilst the surface finish of the blank is not critical, it is highly desirable that it is not highly polished and not overly rough. It is therefore preferred that the surface finish [is between] 0.1 RA and 2.0 RA."

Contrary to the Applicant, Williams teaches that the surface finish is not critical.

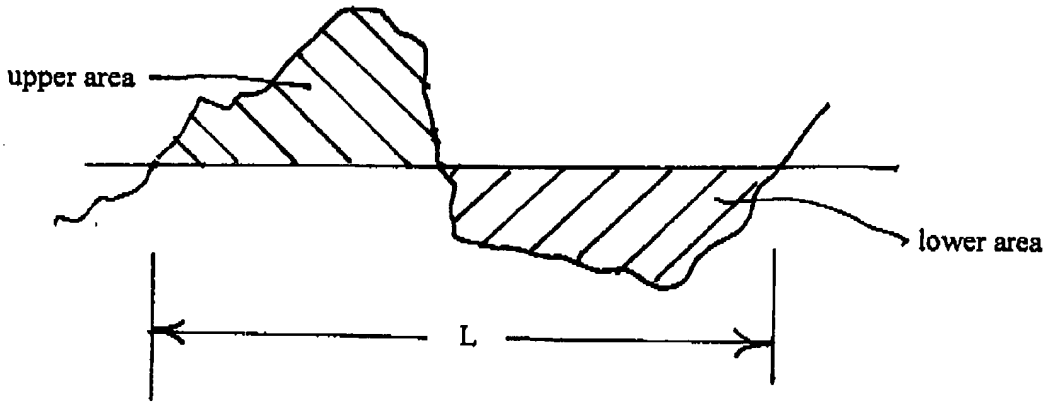
Further contrary to the Applicant, Williams teaches against a "highly polished" surface as the only exception to the lack of criticality of the surface.

As these teachings are contrary to the instant claims, the Applicant understands that the Examiner is relying on the disclosed range of "RA."

In a telephone conversation, the Examiner informed the Applicant of meaning of "RA," for which the Examiner is thanked. As the Applicant understands it, Williams' "RA" stands for "average roughness" and is calculated from a curve corresponding to the edge of a cross-sectional cut, downward through the surface. A straight line, representing the average surface height, is drawn through the curve. The measure RA is based on two adjoining excursions of the curve above and below the average-line, such that in the region under consideration the curve intersects the average-line three times.

The measure RA is then calculated by adding the areas of these two adjoining excursions (the lower excursion area being taken as a positive quantity), taken in square microns, and dividing by the length in microns of the average-line as it passes through both excursions.

The length of the average-line is shown as "L" in the sketch below:



The Examiner is invited to consider that the measure RA is *independent* of the length L of the average-line passing through both excursions. This is because, if the surface curve retains its shape but is stretched or compressed along the direction of the length L of the average-line, the areas increase or decrease in exact proportion to the length L and their ratio does not change.

Thus, if L is very long the surface will be smooth and specular, but if L is short then the surface will be quite jagged, even though the excursions do not reach very far up or down. If L is short, the sides of the excursions will be steep, light waves will be scattered in various directions, and the surface will not be

smooth on the order of a light wavelength

as now claimed. Williams does not disclose a specular surface.

Because smoothness cannot be inferred from the disclosed range of RA, and Williams teaches that the surface should not be highly polished, this reference is seen to teach against the instant claims.

[8-9] Claims 1-3, 6, and 7 are rejected under §103 over Bache '058 in view of Lane '329. This rejection is respectfully traversed.

The Examiner relies on Lane for disclosing a specular surface. The Examiner points to RF sputtering that causes atoms "to seek out one particular location" and argues that the sputtered chromium will flow like a liquid to create a specular surface.

With respect, this argument is based on guesswork by Lane and further guesswork by the Examiner. The cited passage begins, "Although the exact reasons ... are not entirely understood, it is believed that ..." All this indicates a guess and nothing more. Lane goes on to hypothesize that the atoms or molecules are not ionized, but have surface charges of "extremely small magnitude." That is nonsense, as an atom or molecule can only be charged by being ionized. Lane then speculates that these charged atoms act like droplets of water on a hot frying pan, but this is not by either citation, calculation, or argument. The Applicant doubts Lane's idea, on physical grounds.

The Examiner speculates that Lane's imaginary skittering molecules will form a specular surface. With respect, there is no support for this either in the reference or by way of reasoned argument. A pan covered with water droplets, the model for Lane's conjecture, is not smooth.

The Applicant requests reconsideration, as there is neither experimental nor theoretical support for the mechanisms hypothesized by Lane or by the Examiner. There is no disclosure of a specular surface.

[10] Claims 1, 2, and 4 are rejected under §103 over Lane '579. This rejection is respectfully traversed.

The Examiner asserts that glass will take on the characteristics of the base, once deposited. This assertion is not admitted by the Applicant. If it were true, it would argue *against* obviousness, because Lane's base is not specular (as the Examiner admits).

The Examiner asserts that razor blades are well known to be somewhat specular. The Applicant sees that the Examiner is taking Official Notice, respectfully traverses, and requests that a reference or an affidavit be produced.

The Examiner asserts that a specular blade is sharper than a dull blade. The Applicant again sees that the Examiner is taking Official Notice, again respectfully traverses, and again requests that a reference or an affidavit be produced.

The Examiner states that "the glass will be specular since it [is sharp]," which is seen to be based on hindsight reconstruction of the instant claims, rather than on the prior art. The Applicant again sees that the Examiner (as best understood) is taking Official Notice, again respectfully traverses, and again requests that a reference or an affidavit be produced.

[11] Claims 1, 5, and 7 are rejected under §103 over Williams. This rejection is respectfully traversed. There is no explanation of the rejection and the Applicant is unable to respond.

Allowance of all claims under consideration is respectfully solicited.

Respectfully submitted,

Nick Bromer

Nick Bromer
[Registration No. 33,478]
(717) 426-1664, voice and fax

Address: 402 Stackstown Road
Marietta, PA 17547

VERSION WITH MARKINGS TO SHOW CHANGES

IN THE SPECIFICATION

Paragraph starting at page 8, line 12:

To optimize the sharpness of the blade, the cutting layer should be smooth (locally flat) on a distance scale less than or generally equal to its thickness. If the corrugations in the cutting layer are much deeper than the cutting layer is thick, then the cutting layer will not present a thin layer that lies in the direction of cutting. The edge cannot be the intersection of two planes, and therefore cannot be sharp.

IN THE CLAIMS

1. (Amended) A blade, comprising:

a substrate including a specular surface, whereby the surface is smooth on the order of a light wavelength; and

a thin, hard plate deposited on the specular surface, whereby the hard plate is microscopically flat, on the order of a light wavelength;

wherein the substrate is beveled toward a cutting edge including the hard plate, whereby the cutting edge is straight, on the order of a light wavelength, in a cutting direction.

7. (Amended) A blade comprising, on at least one side of the blade, a thin, hard plate including both a thickness and a [flatness] smoothness on the order of a light wavelength.

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (703) 872-9302) on July 1, 2002.

Nick Bromer (reg. no. 33,478)

Signature Nick Bromer